

HR-366 Field Data Acquisition Technologies for Iowa Transportation

Key Words: Data Collection

ABSTRACT

This report describes the results of the research project investigating the use of advanced field data acquisition technologies for Iowa transportation agencies. The objectives of the research project were to (1) research and evaluate current data acquisition technologies for field data collection, manipulation, and reporting; (2) identify the current field data collection approach and the interest level in applying current technologies within Iowa transportation agencies; and (3) summarize findings, prioritize technology needs, and provide recommendations regarding suitable applications for future development. A steering committee consisting of state, city, and county transportation officials provided guidance during this project.

Technologies considered in this study included (1) data storage (bar coding, radio frequency identification, touch buttons, magnetic stripes, and video logging); (2) data recognition (voice recognition and optical character recognition); (3) field referencing systems (global positioning systems [GPS] and geographic information systems [GIS]); (4) data transmission (radio frequency data communications and electronic data interchange); and (5) portable computers (pen-based computers). The literature review revealed that many of these technologies could have useful applications in the transportation industry.

A survey was developed to explain current data collection methods and identify the interest in using advanced field data collection technologies. Surveys were sent out to county and city engineers and state representatives responsible for certain programs (e.g., maintenance management and construction management). Results showed that almost all field data are collected using manual approaches and are hand-carried to the office where they are either entered into a computer or manually stored. A lack of standardization was apparent for the type of software applications used by each agency--even the types of forms used to manually collect data differed by agency. Furthermore, interest in using advanced field data collection technologies depended upon the technology, program (e.g., pavement or sign management), and agency type (e.g., state, city, or county). The state and larger cities and counties seemed to be interested in using several of the technologies, whereas smaller agencies appeared to have very little interest in using advanced techniques to capture data. A more thorough analysis of the survey results is provided in the report.

Recommendations are made to enhance the use of advanced field data acquisition technologies in Iowa transportation agencies: (1) Appoint a statewide task group to coordinate the effort to automate field data collection and reporting within the Iowa transportation agencies. Subgroups representing the cities, counties, and state should be formed with oversight provided by the statewide task group. (2) Educate employees so that they become familiar with the various field data acquisition technologies.